

XXII. "Report on the Exploration of Brixham Cave, conducted by a Committee of the Geological Society, and under the immediate superintendence and record of WM. PENGELLY, Esq., F.R.S., aided by a local Committee; with descriptions of the Organic Remains by G. BUSK, Esq., F.R.S., and of the Flint Implements by JOHN EVANS, Esq., F.R.S." By J. PRESTWICH, F.R.S., F.G.S., &c., Reporter. Received May 16, 1872.

(Abstract.)

This Cave, or rather series of enlarged fissures in the Devonian Limestone, was discovered in January 1858 whilst quarrying the rock on the slope of the hill which rises above the small fishing town of Brixham, near Torquay. The owner of the quarry had the excavation carried sufficiently far to show that the cave had several branches, and contained bones both on the surface of the stalagmite and in the red loam beneath it. Mr. Pengelly visited the cave soon after its discovery, and, believing it likely to prove of much interest, opened negotiations with the proprietor, with a view to secure the right of exploration. There were, however, obstacles which then prevented this object being carried into execution. Shortly afterwards the late Dr. Falconer, while on a visit to Torquay, was informed of the discovery, and, after a careful inspection of the cave, he was so impressed with the opportunity here afforded of working out completely a new and untouched bone-cavern, that on his return to London he addressed a letter to the Council of the Geological Society, in which, after referring to the early researches on ossiferous caves by Dr. Buckland, and the little progress the subject had made since that period, notwithstanding its great interest on so many grounds, he urged the importance of a thorough exploration of such a cave, and suggested that this was a case "deserving of a combined effort among geologists to organize operations for having it satisfactorily explored before mischief was done by untutored zeal and desultory work."

Dr. Falconer further stated that, "from what he had already seen of the cave, he was strongly of the conviction that, with our present advanced knowledge, the thorough investigation of a well-filled virgin cave in England would materially aid in clearing up the mystery, either of the contemporaneity of the Pliocene Mammalian Fauna with the commencement of the Postpliocene Fauna, or of the conditions and associations under which the former was replaced by the latter."

The Council of the Geological Society, not having at their disposal funds for undertaking such a work, addressed a letter to the President and Council of the Royal Society, by whom a grant of £100 was promptly made from the Donation Fund, on the understanding that any specimens obtained should be eventually deposited in the British Museum. This sum was afterwards increased by the liberal donation of £50 from Lady

Burdett Coutts, of £5 from Sir James Kay Shuttleworth, of £5 from R. Arthlington, Esq., and by a further grant of £100 from the Donation Fund of the Royal Society.

A Committee of the Geological Society was thereupon appointed to direct, and a local committee named to carry out the work of exploration. It is, however, to Mr. Pengelly that the Committee are indebted for the constant, close superintendence of the work, and for the record of each day's proceedings,—assistance without which it would not have been possible to have carried through this investigation.

The work was commenced in July 1858, and was sufficiently advanced by the following September to enable Dr. Falconer, Professor Ramsay, and Mr. Pengelly to report highly satisfactory progress, and to state that “one result of great interest had been brought out, namely, the superposition of undoubted remains of the Reindeer above the so-called ‘Flint Knives,’ from which the inference arose that the ‘Reindeer’ continued to be an inhabitant of Britain after the appearance of man in this island.”

In November 1858, by permission of the late Sir R. I. Murchison, a plan and sections of the cave were made by Mr. Bristow, of the Geological Survey, and these were completed by Mr. Bovey, of Brixham, at the conclusion of the exploration.

Brixham stands at the entrance of a narrow valley which runs about three miles inland. The hills on either side consist of Devonian Limestone dipping northward, and rise to the height of from 170 to 190 feet, while higher up the valley traverses Devonian slates and grits. On the slope of Windmill Hill, on the south side of the valley, and at a height of 94 feet above high-water mark, is the entrance to the cave, the galleries of which follow the direction of the two sets of joints traversing these strata—the one running nearly magnetic north and south, and the other being at nearly right angles to it. The several galleries of the cave were found to extend 135 feet from north to south, and 100 feet from east to west; and although the passages became so contracted at the end that further progress was stayed, it is a question whether the ramifications of the cavern do not extend deeper into the hill.

The work of exploration was completed in the summer of 1859, and it was hoped, but for his untimely death, that the late Dr. Falconer would have furnished the Society both with an account of the organic remains and with the general report. As it is, Mr. Busk kindly undertook the former, and I, as Treasurer of the Committee, was deputed to furnish the latter, while Mr. Evans examined and reported on the flint implements found in the cave—the whole being based on Mr. Pengelly's observations and collections.

The object of this investigation is necessarily to put on record, in a form available for future examination, information of that special and exact character which, from the costly nature of the work and the variety of subjects connected with it, places it generally beyond individual research.

In dealing with the theoretical questions connected with the subject, they will be restricted to those alone which are suggested by the local nature of the phenomena.

The main gallery of the cavern was that which extended southwards from the entrance for a distance of 135 feet, and was termed the Reindeer Gallery. From the left of this, and at a short distance from the entrance, is a small inclined passage 40 feet long, and called the "Steep Slide Hole." From the Reindeer Gallery further on branches on the right the Flint-knife Gallery, which runs westward, and terminates in the West Chamber, from which other short galleries, known as the Pen, Keeping's, and Mundy's galleries, proceed, and connected with them is the South Chamber. These chambers were found to have three other external openings, which, like the original entrance from the road, had all become blocked up by fallen débris.

When first opened, all the galleries and chambers were found to be more or less filled with the following deposits, in descending order:—

- 1st. A layer of stalagmite, varying from a few inches to upwards of a foot in thickness.
- 2nd. Reddish cave-earth, with angular fragments and blocks of limestone in places, generally averaging from 2 to 4 feet.
- 3rd. Water-worn shingle, 2 to 6 feet.

In addition to these, a thin layer of peaty or carbonaceous matter extended on the cave-earth from near the entrance to a distance of 40 feet, and was overlain part of the distance by a limestone breccia.

The stalagmite was not of constant occurrence; the Flint-knife Gallery was almost free of it.

In places the galleries were completely choked up by the cave-earth rising to the ceiling, as in the West Chamber and part of the Flint-knife Gallery. A few pebbles, the same as those composing the underlying shingle bed, were occasionally found in the cave-earth, together with fragments of stalagmite,—portions, apparently, of an old destroyed stalagmite floor. These latter were extremely numerous in the West Chamber and adjacent part of the Flint-knife Gallery, and also in the Steep Slide Hole, where no stalagmite floor existed.

The basement, or shingle bed, consisted of pebbles of limestone, quartz, greenstone, grit, and shale, all derived from rocks of the Brixham district. In one part of the Flint-knife Gallery the gravel rested on a continuous limestone floor, but elsewhere its base was not reached, the fissures contracting to a wedge too narrow to allow of working them out to the bottom.

The section of the Reindeer Gallery may be likened to the irregular figure of a skate, with double pectoral fins—the shingle bed filling the space represented by the tail, or a little more, and the cave-earth extending usually about halfway up the body. The pectoral fins represent the position of two sets of longitudinal grooves, which Mr. Pengelly states to extend the whole length of the cave, with a general slight dip in a given

direction from the West Chamber, and also from the main entrance to the Steep Slide Hole. Below this the limestone walls curve inwards, "but instead of meeting to form a continuous floor, they remain separated by a central longitudinal fissure, which varies from 3 to 18 inches in width, tapering till the walls meet," and forming, as it were, the tail of the skate. The dimensions and exact shape of all these parts vary considerably; 6 to 8 feet in width by 8 to 10 in height may, however, be taken as the average dimensions of the galleries above the basal fissure.

In addition to the existing stalagmite floor, remains of an older and higher floor were found throughout part of the Reindeer Gallery, extending in places horizontally from wall to wall, and varying from 6 inches to a foot in thickness. Above the considerable openings which occurred in it, there was an open space of from 1 to 5 feet high. In places fragments of limestone, of quartz, and of older stalagmite, both angular and rounded, were attached to the underside of this stalagmite ceiling.

In that part of the Reindeer Gallery called the Crystal Gorge, there was a series of six or seven thin stained layers of stalagmite extending from wall to wall, and separated by layers of the cave-earth.

A few stalactites depended from the roof of the Reindeer and Pen Galleries and the South Chamber.

Mr. Pengelly found that the "dips of both the second and third beds corresponded, in amount and direction, to that of the grooves in the same branches of the cavern. But between the eastern end of the Flint-knife Gallery and the northern end of the Crystal Gorge, the inclination of these beds was southwards, that is from the former to the latter point." Mr. Pengelly also describes some variations in the deposits of the less important part of the cavern, which do not, however, affect the general persistence of the characters and structure above named.

Organic Remains.—No shells were found in any of the beds; but a considerable number of existing land-shells, and one limpet-shell, were found on the surface, and a few in the stalagmite. They were most numerous near the external entrances.

Mammalian remains were found sparingly in the stalagmite, in abundance in the cave-earth, and rarely in the shingle. Mr. Pengelly gives a complete list of every find, and tabulates the result in a series of valuable tables, from which it appears that in the stalagmite 25 bones were found, in the cave-earth and on its surface 1589, and in the shingle 7, making a total of 1621 bones. Of these, 835 occurred in the Reindeer Gallery, 515 in the Flint-knife Gallery, 244 in the West Chamber, and only 27 in the other parts of the cave. A great part of these were found at various depths of from 1 to 10 feet beneath the top of the cave-earth; but a considerable number were also found on the surface of the cave-earth, generally where there was no stalagmite, especially in the southern extremity of the Reindeer Gallery, and were the remains of

small rodents, no doubt of comparatively recent introduction. Omitting these 519 specimens, the number of bones in the cave-earth is reduced to 1102.

No coprolites were found in any part of the cave.

The bones belong to 20 or 21 animals, referred by Dr. Falconer and Mr. Busk to the following species :—

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| 1. <i>Elephas primigenius</i> . | 11. <i>Ursus spelæus</i> . |
| 2. <i>Rhinoceros tichorhinus</i> . | 12. — <i>ferox (priscus)</i> . |
| 3. <i>Equus caballus</i> . | 13. — <i>arctos</i> . |
| 4. <i>Bos primigenius?</i> | 14. <i>Canis vulpes</i> . |
| 5. — <i>taurus?</i> | 15. <i>Lepus timidus</i> . |
| 6. <i>Cervus elaphus</i> . | 16. — <i>cuniculus</i> . |
| 7. — <i>tarandus</i> . | 17. <i>Lagomys spelæus</i> . |
| 8. <i>Capreolus capreolus</i> . | 18. <i>Arvicola amphibius</i> . |
| 9. <i>Felis leo</i> (var. <i>spelæa</i>). | 19. — — ? |
| 10. <i>Hyæna spelæa</i> . | 20. <i>Sorex vulgaris</i> . |

On these Mr. Busk makes the following remarks :—

1. Remains of the Mammoth occurred in five situations, viz. the Reindeer Gallery, the Flint-knife Gallery, the West Chamber, South Chamber, and Steep Slide Hole. For the most part they appear to have lain at a considerable depth, and, with one or two exceptions, they were the only remains met with in the shingle bed. On the whole, it would appear that these remains occupied the deepest levels in the cavern.

The most remarkable specimens among these bones are an *astragalus* and the lower end of the corresponding tibia, which were found in close contiguity, and doubtless belonged to the same individual. It is tolerably certain that they had been introduced into the cavern whilst still connected by the soft parts. The *astragalus*, which is nearly entire, is much gnawed on the inner, anterior, and hinder aspects, and the portion of tibia is also gnawed on the same three sides, that upon which they lay presenting no marks of the *Hyæna*'s teeth. It is to be remarked that no fragments of the tusks or teeth of the mammoth were met with, whence it may perhaps be concluded that the remains discovered were merely the relics of parts brought in by *Carnivora* for prey.

2. The remains belonging to the Woolly Rhinoceros were rather numerous, amounting to between sixty and seventy specimens : of these no less than forty-nine occurred in the "Reindeer" and "Flint-knife galleries;" they were usually met with at a considerable depth in the cave-earth. In the South Chamber, however, one specimen, most probably rhinocérine, though possibly elephantine, was found "in the stalagmite floor," whilst other undoubted fragments occurred "immediately beneath it." A curious circumstance with respect to the rhinocérine remains consists in the numerous instances of the middle portion of the femur, or that part which includes the base of the third trochanter, which have been gnawed

by Hyænas in almost exactly the same manner—a condition in which Mr. Boyd Dawkins informs us numerous remains of the thigh-bone of Rhinoceros were found in Wokey Hole. Many of the rhinocerine bones, however, presented no marks of gnawing or of being water-rolled.

3. The equine remains include about thirty well-marked specimens, indicating a species varying from 13 to 15 hands high, and indistinguishable from the existing Horse. They varied a good deal in external characters, some appearing as ancient as those of the Hyæna, whilst others presented, like some of those of the Bear, a far more modern aspect.

4, 5. The bovine remains are not very numerous, and, with the exception of the teeth, most of them are very imperfect. They occurred chiefly in the Flint-knife Gallery and West Chamber. From the size of the bones and certain other characters, these bovine remains appear to have belonged to more than one species, which may be provisionally regarded as *Bos primigenius* and *Bos taurus* (var. *longifrons*).

6. Not more than ten or eleven specimens certainly referable to *Cervus elaphus* appear to have been met with, and these, with three exceptions, lay at an average depth of between three and four feet in the cave-earth in the Reindeer and Flint-knife Galleries. The majority of the specimens consisted of either the basal portion of shed horns or fragments (2) of round antlers.

7. Next to those of the Bear, the remains of the Reindeer are by far the most abundant of all others in the collection. About seventy well-characterized specimens have been determined. They occurred in about fifty different localities in the Reindeer and Flint-knife Galleries and in the West Chamber; they occurred at a rather less depth in the Reindeer than in the Flint-knife Gallery, but in both localities generally at a depth of little more than two or three feet in the cave-earth. Several (five or six out of thirty-five) were found lying on the surface or immediately beneath it, some below and others either on or protruding through the stalagmite floor. Some are incrustated with a thin, crystalline stalagmitic deposit. But it is a curious circumstance that several among them, though met with in different parts of the cavern and at considerable distances apart, appear to be parts of the skeleton of one and the same young animal. Most of the Reindeer bones, but not all, present marks of gnawing.

8. The specimens of remains distinctly belonging to the Roebuck are not more than ten or twelve in number. Some among them are gnawed, but others not; but they exhibit, perhaps more distinctly than any of the other bones, indications of having lain long on the surface of the ground, and exposed to atmospheric influence, before their introduction into the cavern.

9. The remains of the Cave Lion are scanty in number, but amply sufficient to show that carnivora formed part of the most ancient fauna of the cavern.

10. Next below those of the Reindeer in frequency are the remains belonging to *Hyæna spelæa*, amounting to about sixty in number; and they occurred in nearly equal proportions in three divisions of the cavern, their average depth in the cave-earth exceeding 3 feet. No specimen seems to have occurred above the stalagmite floor, nor more than four or five on or very near the surface of the cave-earth. Their general condition betokens great antiquity, and very few among them exhibit any indication of gnawing, weathering, or rolling. Many among them are quite perfect, and in all probability belong to one and the same animal. The bones and teeth clearly indicate several individuals of all ages, from that at which the epiphyses of the femur and tibia were still ununited, up to one at which the canine teeth were almost worn away; but no certain trace of a foetal or very young *Hyæna* is perceptible. All the teeth belong to the permanent series.

11, 12, 13. Of all the animal remains discovered in the cavern, those belonging to the Bear are by far the most numerous, and in some respects, more especially with regard to their distribution, perhaps of the greatest interest.

In the present, as in almost every instance of the occurrence of ursine remains in caverns, the extreme variation in size and other characters of the different bones and teeth is so great, as naturally to lead to the belief that they must have belonged to more than one species.

The number of specimens clearly determined is about 350 or 360, and to these, from among the less easily determined fragments, probably forty or fifty more might be added. But, in part explanation of this large number, it should be remarked that it includes several collections, each composed of numerous bones of the skeletons of individuals of various ages found lying together at the same spot.

Of the specimens enumerated above, about 116 occurred in the Reindeer Gallery, 214 in the Flint-knife Gallery, 26 in the West, and only 1 in the South Chamber.

Taking all the levels at which these remains were found, the mean horizon of the genus *Ursus* appears to be about the same as that of the Reindeer, and a few inches above that of the *Hyæna*. It must also be remarked that, as compared with the latter species, a much larger proportion of the ursine remains were found lying on or near the surface of the second bed, or sometimes even imbedded in the stalagmite itself. Another remarkable circumstance connected with the ursine remains is the frequency with which bones, obviously belonging to one and the same skeleton, were found collected together in one spot; and to this remark it may be added that the great number of very young, or even foetal bones, affords the strongest possible evidence that the Bear actually inhabited the cavern. The close investigation and comparison of the ursine bones and teeth leaves little doubt that they represent the remains of three distinct

forms or species, viz. *U. spelæus*, *U. ferox fossilis** (*U. priscus*, Goldf.), and *U. arctos*, or the existing European and Asiatic Brown Bear: but the evidence tending to show this would demand more space than can be given to this abstract.

14. Strange to say, the genus *Canis* is represented only by the Fox, no trace of the Wolf having occurred in the entire collection; and of the Fox not more than seven specimens were met with, five of which occurred in the Reindeer Gallery, and all but one on or near the surface: but in no other respect is there the slightest difference in the characters of the bones and teeth.

15-20. Innumerable bones of the Hare and Rabbit, of different sizes and of all ages, occurred in the Reindeer and Flint-knife Galleries, and for the most part on or near the surface of the third bed, or in the stalagmite floor. The only marked exceptions to this are in "find" No. 92, which affords the tibia of a young Hare, found at a depth of three feet in the Reindeer Gallery.

The most interesting of all the rodent remains, however, is a fragment of the skull, including, fortunately, the entire maxilla, with all the teeth but one of *Lagomys spelæus*. It was found, together with numerous bones of the Polecat, Hare, Rabbit, Water-Rat, Shrew, &c., in the Reindeer Gallery, 110 feet from the Dyer's Entrance, lying on the surface of the second bed. It differs in no respect, as regards condition or appearance, from the other bones with which it was associated, and, like most of them, is very slightly dendritic.

Traces of Man.—Not a single human bone has been found in Brixham Cave; but thirty-six rude flint implements and clips, referable in great part, or wholly, to man's workmanship, were met with in different parts of the cave; of these, sixteen were found in the bed of shingle, at depths in it of from 6 inches to 12 feet, or, including the overlying beds, of from 6 to 18 feet from the surface of the cave-floor. Seventeen were found in the Reindeer Gallery, five in the Flint-knife Gallery, eleven in the West Chamber, and three in other parts. In fourteen instances their infraposition to bones of the Mammoth, Rhinoceros, Hyæna, Tiger, Bear, Reindeer, Red Deer, Horse, and Ox is perfectly well proved, as many as 120 of such bones having been discovered higher in the cave-earth over where these flints were found. One specimen in particular deserves notice; it is a roughly shaped flint hatchet, broken in two, but the two halves not worn, and their jagged edges fitting perfectly. These two parts were found buried in the cave-earth in distant parts of the cave, and it was not until some time after their discovery that Dr. Falconer detected their relation.

The report then proceeds to discuss the origin of the cave, and the mode in which its contents were accumulated, considering this to be a typical case for a large number of ossiferous caves.

* It was the specimens from this cave that first led Mr. Busk to recognize this northern American species amongst the ossiferous cave-fauna of Europe.

The cave follows the course of two lines, or planes of joint, traversing the limestone, along which the galleries have been excavated by the long-continued action of water. Mr. Pengelly attributes the excavation "to a stream of fresh water not subject to great floods, and flowing constantly from the West Chamber through the Flint-knife and Reindeer Galleries to the Steep Slide Hole." Mr. Bristow, on the other hand, is inclined to attribute some portion of the formation of the cave to marine action at a time when the land was lower. The same causes are supposed by these gentlemen to have led respectively in each case to the accumulation of the bed of shingle; and as no shells are found in it, this question has to be settled on other than palæontological evidence. Both, however, refer the cave-earth to subaërial action, Mr. Pengelly considering it to have been chiefly carried on by running water, whereas Mr. Bristow views it as mainly due to the erosion of the limestone, whereby the calcareous portion has been dissolved and the insoluble portion left behind as a red loam. In the same way Mr. Pengelly is of opinion that the bones were likewise carried in from the exterior by the action of running water; while Mr. Bristow, like Mr. Busk, thinks that they are for the most part those of animals which were carried into the cave to be devoured.

It is difficult to reconcile the conditions of the bones and their numbers with their introduction by water; for a large number are not at all worn, and a great proportion of them show sharply graven marks of gnawing. At the same time the local origin of the cave-earth cannot be admitted, for the mass of limestone removed is quite insufficient to have formed so large a quantity. Your reporter is of opinion that the bones were brought into the cave by predatory animals, and that they are, in some cases, the bones of animals which died there; but he considers the cave-earth to have been introduced by water, not by a constant, slow running stream, but by occasional floods; for all the circumstances of the case seem to show that at certain periods the cave was dry and at other periods flooded by fresh water, that during the former intervals the cave was frequented by Hyænas which brought in their prey to devour, and that with each successive inundation successive collections of bones were covered up and imbedded in the sediment with which the flood-waters were charged. The weathering of some of the bones noticed by Mr. Busk is a weathering which may have occurred in the cave; for it is evident that all the bones were not at once imbedded in the cave-earth, as there are some which are incrustated with a thin coating of stalagmite that must have been produced by their lying for a time exposed to the dripping from the roof before they were covered up. Others, on the other hand, in places free from the dripping, would weather to a certain degree, as they would weather on the surface of the ground, according to the length of exposure. That the formation of stalagmite, under certain favourable conditions, did proceed during the whole cave-period is apparent from the section given by Mr. Pengelly, where at

one spot, favourably situated, a series of thin seams of stalagmite, contemporaneous with the cave-earth, was met with.

Although the evidence proves the contemporaneity of Man with the cave animals, it is doubtful whether Brixham Cave was at that period ever inhabited by man. Caves have constantly been a place of resort for uncivilized man, either for shelter or for security. When resorted to permanently for these objects, traces of his habitation, in the form of refuse (whether of bones cast away at meals, of broken and lost tools of daily use, and, after the discovery of fire, of hearths and their surroundings), necessarily occur in quantities more or less abundant, according to the length of man's habitation; but no such evidence of his presence exists. It may rather be supposed that the worked flints were lost or left behind by man during occasional visits to the cave, either for the sake of temporary refuge, or in following prey which may have sought shelter there.

Looking at all the phenomena of Brixham Cave, the conclusion your reporter has arrived at is that the formation of the cave commenced and was carried on simultaneously with the excavation of the valley—that the small streams flowing down the upper tributary branches of the valley entered the western openings of the cave and, traversing the fissures in the limestone, escaped by lower openings in the chief valley, just as the Grotte d'Arcy was formed by an overflow from the Cure taking a short cut through the limestone hills, round which the river winds. These tributary streams brought in the shingle bed No. 3 which fills the bottom of the fissure. It was only during occasional droughts, when the streams were dry, that the cave seems to have been frequented by animals, their remains being very scarce in that bed, while indications of man are comparatively numerous. As the excavation of the valley proceeded, the level of the stream was lowered and became more restricted to the valley-channel. The cave consequently became drier, and was more resorted to by predatory animals, who carried in their prey to devour, and was less frequented by man. At the same time, with the periodical floods which there is every reason to believe, from other investigations, were so great during the quaternary period, the cave would long continue to be subject to inundations, the muddy waters of which deposited the silt forming the cave-earth, burying progressively the bones left from season to season by succeeding generations of beasts of prey. By the repetition at distant intervals of these inundations, and by the accumulation during the intervening periods of fresh crops of bones, the bone-bearing cave-earth was gradually formed. During this time the occasional visits of man are indicated by the rare occurrence of a flint implement lost probably as he groped his way through the dark passages of the cave. As the valley became deeper, and as, with the change of climate at the close of the quaternary period, the floods became less, so did the cave become drier and more resorted to by animals. At last it seems to have become a place of permanent resort for bears: their remains in all stages of growth, including even sucking cubs, were met with in the upper part of the cave-earth,

in greater numbers than were the bones of any other animal. These animals resorted especially to the darker and more secluded Flint-knife Gallery, where 221 out of 366 of their determinable bones were found, whereas only twenty-six were met with in the Reindeer Gallery.

Finally, as the cave became out of the reach of the flood waters, the drippings from the roof, which up to this period had, with the single exception before mentioned, been lost in the accumulating cave-earth or deposited in thin calcareous incrustations on the exposed bones, now commenced that deposit of stalagmite which sealed up and preserved undisturbed the shingle and cave-earth deposited under former and different conditions. The cave, however, still continued to be the occasional resort of beasts of prey; for sparse remains of the Reindeer, together with those of the Bear and Rhinoceros, were found in the stalagmite floor. After a time, the falling in of the roof at places (and any earthquake movement may have detached blocks from it) and the external surface-weathering stopped up some parts of the cave, and closed its entrances with an accumulation of *débris*. From that time it ceased to be accessible, except to the smaller rodents and burrowing animals, and so remained unused and untrodden until its recent discovery and exploration.

At this time it is not necessary to contend for the correctness of many of the early observations, so long contested, in evidence of the antiquity of man; they are too numerous and too well attested to admit of doubt, and are now generally accepted by geologists. At the same time it is to be observed that the discovery and exploration of Brixham Cave have had a very important influence in bringing about such a result. The discoveries of Schmerling and others had dropped into oblivion, the assertions of M. Boucher de Perthes were ignored, until the certainty of the facts early established in the exploration of Brixham Cave showed the strong *primâ facie* evidence in proof of the contemporaneity of man and of the great extinct mammalia, and at once led to the conclusive investigation of the Somme valley. The evidence of Brixham further has its own special points of value,—in the completeness of its record, in the certainty of its data, and in the fact of its having been the first ossiferous cavern worked out in a systematic and complete manner, of which the record, plans, and sections are complete, and of which every specimen is preserved, duly marked and registered, so that it can at any time be assigned to its exact original place in the cave. This work, in fact, is not only important as the first systematic attempt to solve an obscure natural-history question, but it may further be considered as having inaugurated the great question, since so well established on other additional evidence, of the Antiquity of Man.